

Operational Characteristics of Antiretroviral Therapy Clinics in Zambia: A Time and Motion Analysis



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Background

- In 2017, the Zambian Ministry of Health expanded antiretroviral therapy (ART) eligibility to include all HIV-positive individuals regardless of World Health Organization (WHO) clinical staging and CD4 cell count [1].
- This has resulted in congestion and staff shortages in ART clinics, long wait times for patients, limited patient-clinician interactions, and increasing workloads for the already burdened clinical staff [2,3]. If not addressed, these issues may have long-term effects on ART clinic operations and patient retention.
- Differentiated HIV care models could increase clinic efficiency, quality of service and patient retention for stable ART patients. However, there is need to understand operational characteristics of ART clinics before implementing these models.

Objective

- This study aimed to assess the distribution of staff time among key clinical activities, duration of patient-provider interactions and length of different patient visits.

Methods

- Time and motion (TAM) measurements were collected at 10 out of 26 ART clinics implementing differentiated models for HIV care.
- Clinics were purposively sampled based on retention rate, geographical representation, and types of differentiated care model to be implemented
- Sensitization meetings were held to inform the clinic staff of the TAM study, obtain verbal consent, and to assure the clinic staff of confidentiality and that TAM study has no associate to their performance review/appraisal
- TAM team was formed of 4-6 members with each assigned to one or more service stations throughout the ART clinic to observe and record service times and staff movement using TAM forms (Figure 1). One member recruited patients to complete patient TAM forms to measure total time spent in the clinic (Figure 2).
- We evaluated the mean and median minutes spent by clinic staff and patients on ART services. We also assessed administrative work, patient interaction and time spent on non-clinic activities. Stata (Version 14, StataCorp LLC, College Station, TX, USA) was used to analyze the TAM data.

TIME AND MOTION FORM COMMUNITY ART FOR RETENTION IN ZAMBIA

CLINIC NAME _____

DATE (DD/MM/YY) _____ Name of the observer _____

STATION (name according to the actual room names assigned) triage, counseling, pharmacy, clinical visit, adherence, weighting, registry, Other) _____

Health Care Worker code _____			
Time period	Activity Code	Total # patients	Comments/Notes (Indicate type of patient seen)
From	To		
:	:		
:	:		
:	:		
:	:		
:	:		
:	:		
:	:		
:	:		
:	:		

Health Care Worker code _____			
Time period	Activity Code	Total # patients	Comments/Notes (Indicate type of patient seen)
From	To		
:	:		
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Fig 1: Staff TAM Data Collection Form

Results

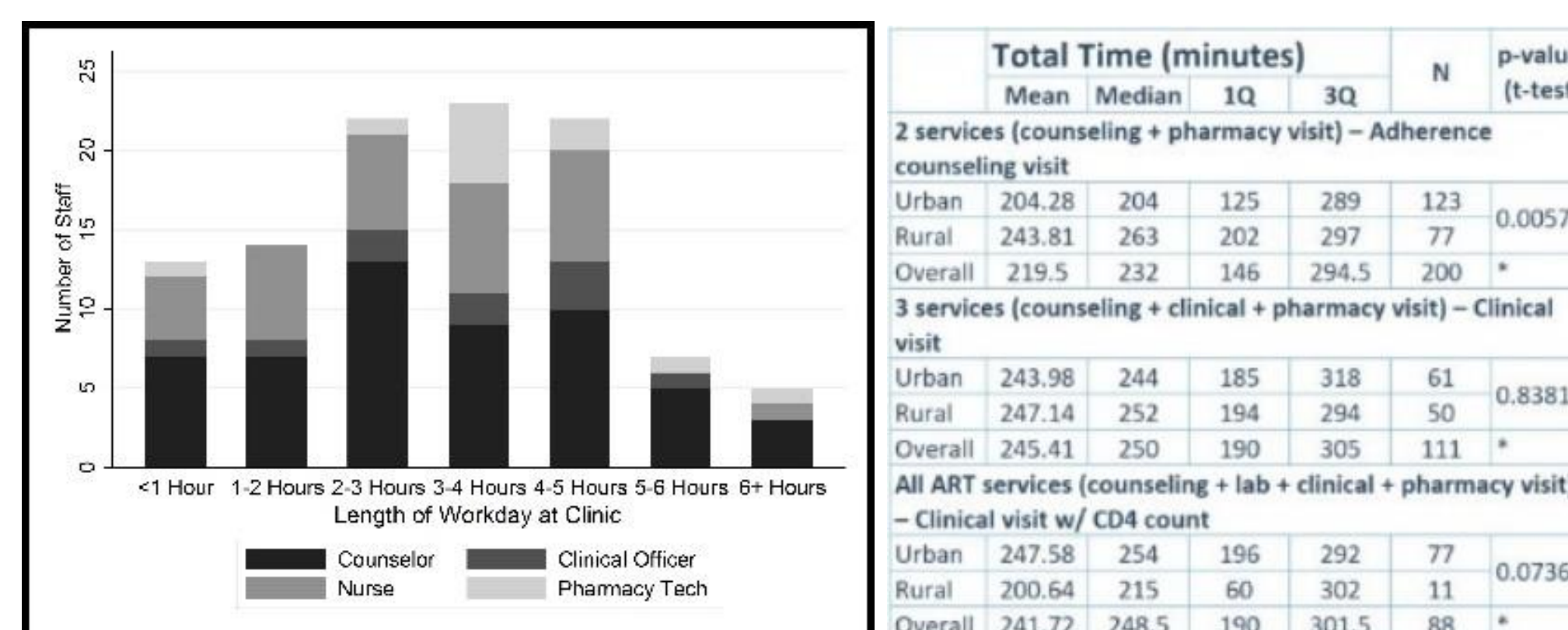


Figure 2: Length of workday at clinic across staff

Table 1: Patient time at Clinic based on type of clinic visit

Key clinical activities	Counselors			Clinical Officers			Nurses			Pharmacy Tech		
	Time (minutes)	Obs.		Time (minutes)	Obs.		Time (minutes)	Obs.		Time (minutes)	Obs.	
	Mean	Median (1Q, 3Q)	N	Mean	Median (1Q, 3Q)	N	Mean	Median (1Q, 3Q)	N	Mean	Median (1Q, 3Q)	N
Adherence	5.43	4 (2,7)	435	-	-	-	2.75	3 (1.5,4)	4	-	-	-
Counseling	3.51	2 (2,4)	247	3.86	3 (2,5)	287	3.5	3 (2,4)	549	-	-	-
Clinical Visit	3.08	3 (2,4)	69	3.5	3.5 (2,5)	2	1.32	1 (1,2)	19	2	2 (1,2)	522
Pharmacy	-	-	-	-	-	-	4.06	4 (3,5)	94	-	-	-
Lab	-	-	-	-	-	-	-	-	-	-	-	-

Table 2: Time Spent on Activities by Role

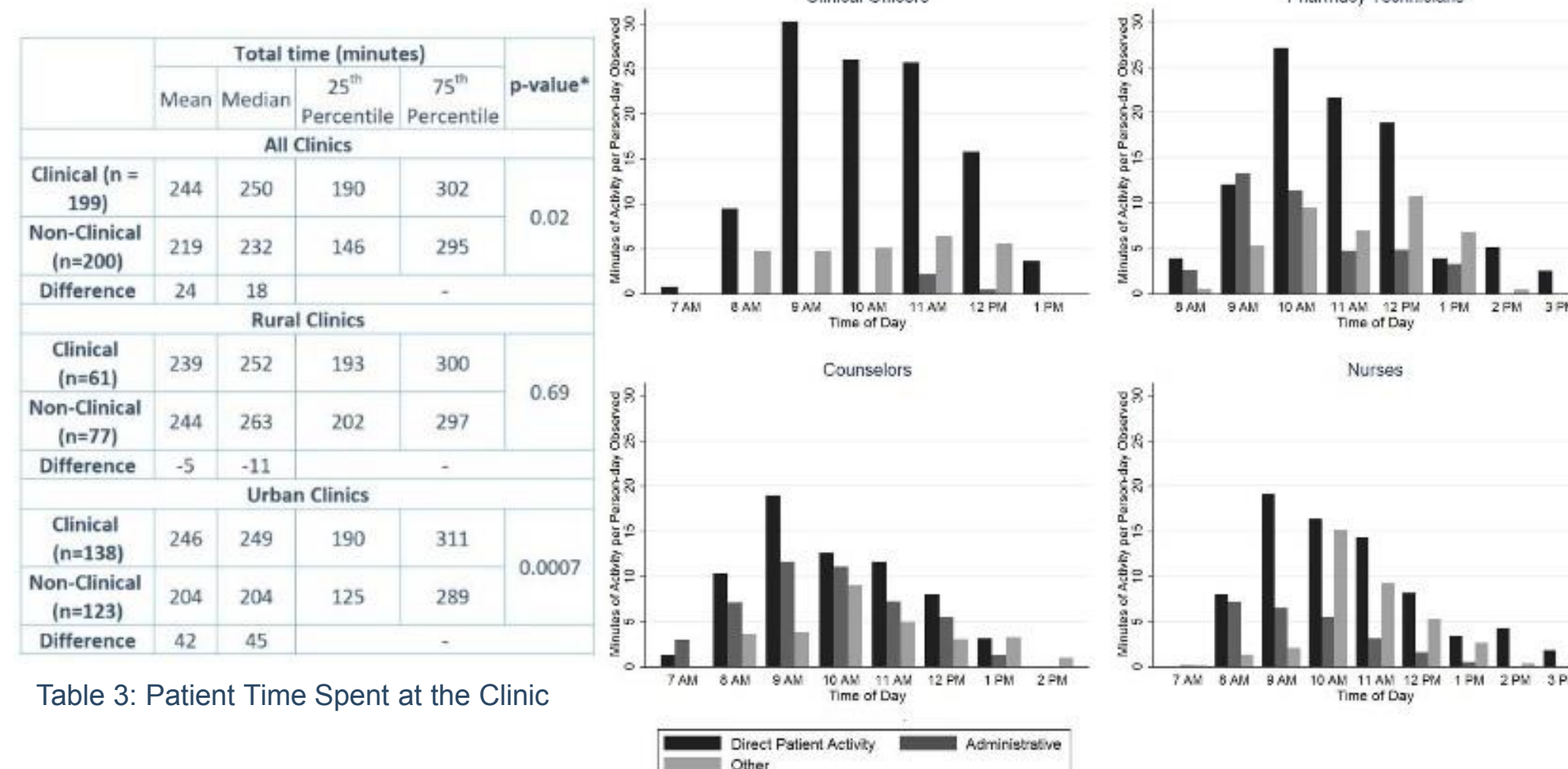


Table 3: Patient Time Spent at the Clinic

Figure 3: Minutes of activity by time of day and clinic role

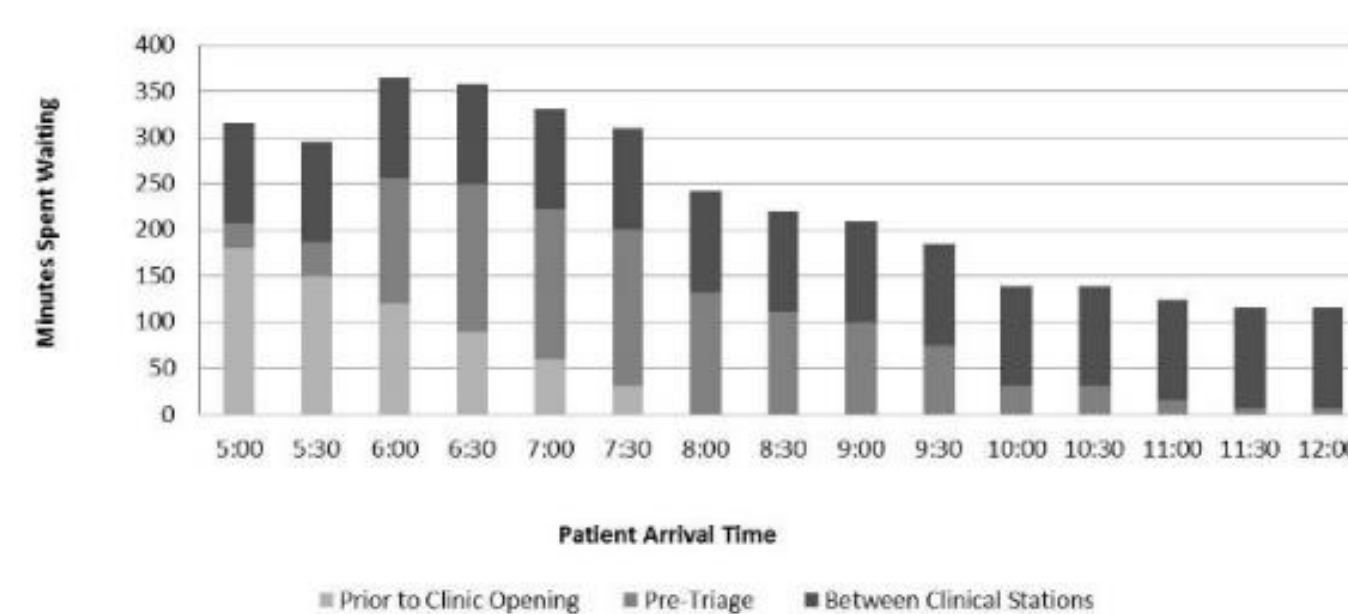


Figure 4: Minutes spent waiting at the clinic across time of the day

Results, cont.

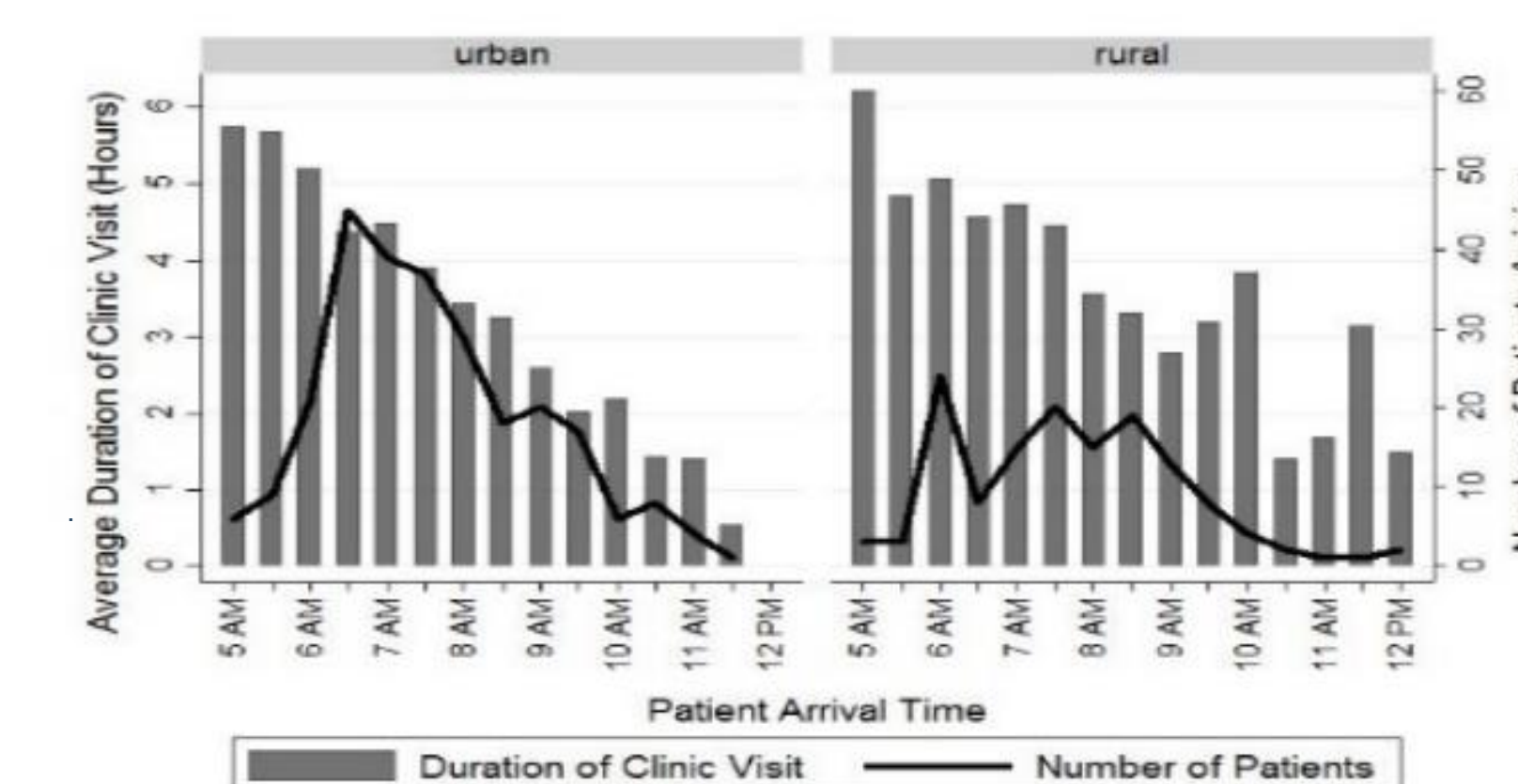


Figure 5: Duration of clinic visit compared with volume of patients visiting clinics

Key Findings

- We find that patient wait times are inversely related with arrival times
- Large percentages of patients arrive before clinics open in the morning and early in the day, the average length of total patient clinic visits are inversely related with arrival times as well
- The duration of each interaction between patients and clinic staff is limited with most interactions lasting less than 4 minutes
- Clinic staff are spending limited amounts of their work day staffing the ART clinic where between 20% and 53% of their time is spent performing administrative and other non-patient activities
- Patient related and administrative activities are more heavily concentrated between 8AM and 12AM for clinic staff
- Significant differences in total patient time for clinical and non-clinical visits exist – specifically in urban settings

Conclusions

- Current patient care for ART services in Zambia suffers from inconsistencies in clinic efficiency throughout the day driven by increased congestion due to high patient volumes early in the day. This may effect the amount of time that patients can spend with clinic staff and health care providers. Differentiated models of ART delivery have potential to improve patient care. If the majority of eligible stable ART patients can be enrolled in less intensive delivery options, clinic staff may be able to spend more time on patients with acute medical needs.

Acknowledgments

CommART Time & Motion field study team, ART clinic members at the study clinic, members of the Centre for Infectious Disease Research in Zambia (CIDRZ), Ministry of Health (Zambia), UCSF and Bill and Melinda Gates Foundation.

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